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DOI:

[10.1016/j.healthplace.2017.08.009](https://doi.org/10.1016/j.healthplace.2017.08.009)

Document Version

Publisher's PDF, also known as Version of record

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Citation for published version (APA):

Li, J., & Rose, N. (2017). Urban social exclusion and mental health of China's rural-urban migrants: A review and call for research. *HEALTH AND PLACE*, 48(20-30), 20-30. [JHAP1885].
<https://doi.org/10.1016/j.healthplace.2017.08.009>

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Urban social exclusion and mental health of China's rural-urban migrants – A review and call for research



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ARTICLE INFO

Keywords:

Urban social exclusion
Mental health
Rural-urban migrants
Urbanization
China

ABSTRACT

China's internal rural-urban migrants experience social exclusion that may have significant mental health implications. This has historically been exacerbated by the hukou system. Echoing recent calls for interdisciplinary research on the interdependencies of urbanization and mental health, this review examines evidence of rural-urban migrants' mental health status in comparison with nonmigrants and its association with various dimensions of social exclusion. We found conflicting evidence on the mental health status of migrants in comparison with nonmigrants, but strong evidence that social exclusion is negatively associated with migrants' mental health: limited access to full labour rights and experience of social stigma, discrimination and inequity were the most significant factors. We discuss the limitations of current social epidemiological research and call for an attempt to use close-up, street-level ethnographic data on the daily experience of being a migrant in the mega-city, and describe our aim to produce a new sociological deep surveying instrument to understand migration, urban living, and mental health.

1. Introduction

China's economic reform and rapid urbanization over the past three decades has led to unprecedented massive rural-to-urban migration. Up to 2015, around 277 million people had left their hometown in rural areas to seek job opportunities and pursue a better life in the rapidly growing cities. In such a large country with great variation in regional geography, culture and lifestyles, China's internal migrants are likely to encounter diverse challenges in adapting to their new environments, which are likely to be different from those of international immigrants. Epidemiological research has documented that migration and urbanicity both contribute to the risks of mental illness, associated with particular features of the urban environment or difficulties encountered in migration (Galea et al., 2011; Virupaksha et al., 2014). Concerns about the burden of mental disorders and its association with urbanicity have grown worldwide, however, little is known about the extent of these issues in the rapidly-expanding megacities in developing countries such as China, Brazil and India. As Amin has argued “for the vast majority, cities are polluted, unhealthy, tiring, overwhelming, confusing, alienating. They are the places of low-wage work, insecurity, poor living conditions and dejected isolation for the many at the bottom of the social ladder daily sucked into them” (Amin, 2006, p1011). This may be particularly true for China's rural-urban migrants

who have to leave their familiar countryside life and survive adjustment to life in big cities with socio-economic disadvantages and institutional barriers, which could lead to their urban social exclusion. Interdisciplinary research involving sociologists, historians, anthropologists, urban geographers, psychiatrists, neuroscientists and others is required to understand these issues. To that end a series of international and interdisciplinary workshops on ‘the urban brain’ were held in London from 2013, leading to a call for conceptually informed empirical studies of the ‘neuropolis’ (Fitzgerald et al., 2016a) and a programme of research on mental health, migration and megacities, focused initially on Shanghai.¹ Along the same lines, Adli et al. (2017) recently called for an interdisciplinary approach termed “neurourbanism” to “characterise urban stressors and their modulators and identify high-risk populations (eg, migrants) who do not have equal access to what is called the urban advantage, but are more exposed to stressors such as social isolation”.

The focus of most conceptual work on migration and mental health from the 1930s to the present has been on transnational migration (Bhugra, 2004; Cantor-Graae and Selten, 2005; Odegaard, 1932), yet the mental health consequences for ‘internal’ migrants – who have made up the greater part of population movements both historically and today – has been less explored. The literature explains the links between transnational migration and mental health consequences

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¹ The workshops, and the subsequent research programme, were funded by the ESRC (ES/N010892/1).

primarily through two social process – social and economic inequality and acculturative stress – both are based on ethnicity and race. The social and economic inequality thesis argues that immigrants as ethnic minorities suffer from economic disadvantage, racial harassment or discrimination, and inequalities in access to health services, while the acculturation thesis focuses on the loss of language and changes in attitudes, values, social structures and support net-works, which forms one's ethnic identity (Nazroo and Iley, 2011; Ruiz et al., 2010). How these processes are related or different to internal migration depends on the specific contexts of discussion. For example, internal migrants in China are faced with hukou-based rather than ethnicity-based social exclusion, and they also experience differences in language (particularly colloquial and dialect), value, and lifestyles, but likely to a lesser extent compared with cross-border migrants. In the present paper, we consider the extent to which the concept of social exclusion might contribute to the development of a theoretical understanding of the relations of rural to urban migration and mental health today. Thus we use the concept of social exclusion to review available literature on the mental health status of rural-urban migrants in China, discuss the limitations of current epidemiological research and argue for the need for this research to be supplemented with close-up, street-level ethnographic data on the daily experience of being a migrant in the mega-city if we are to develop an adequate – and actionable – understanding of the complex interrelations of migration, urban living, and mental health.

The concept of social exclusion is multidimensional and contextual and it is defined differently in different disciplines. Levitas et al. (2007) in their report *The Multi-dimensional Analysis of Social Exclusion* prepared for the Social Exclusion taskforce of the then UK Government, provided an expansive definition of social exclusion, which we will utilize in this paper: “Social exclusion is a complex and multi-dimensional process. It involves the lack or denial of resources, rights, goods and services, and the inability to participate in the normal relationships and activities, available to the majority of people in a society, whether in economic, social, cultural or political arenas. It affects both the quality of life of individuals and the equity and cohesion of society as a whole” and they added that “Deep exclusion refers to exclusion across more than one domain or dimension of disadvantage, resulting in severe negative consequences for quality of life, well-being and future life chances.” The aspects highlighted in this definition are particularly relevant to rural-to-urban migrants in China where the legacy of the socialist hukou system continues to limit their full citizenship rights when they move to cities. Under the hukou system, in operation from the mid-1950s, each individual was registered in one place of residence, and was categorized as a rural or urban resident on their hukou status. In the socialist era, the hukou system as a social control and administrative mechanism had two major functions: allocation of social resources (e.g. housing, education, health care etc.) in favour of urban dwellers and restriction of migration, particularly from rural to urban areas. The hukou system has been undergoing a gradual reform since the late 1980s when the central government allowed rural-urban migration without transfer of hukou status. However, it was not until 2003 that rural migrants' basic rights in the cities have gradually been recognized by the central government. Since then, a series of policy reforms have taken places in many cities to provide some public services to them, and increasing numbers of small and medium cities have begun to grant rural migrants local hukou status on certain conditions. Nonetheless, it is not clear what proportion of rural-urban migrants in China actually wish to move their hukou from their villages, as many currently maintain close connections with their places of origin, and express the intention of returning there after some five years of city life (Liu et al., 2017b; Tang and Feng, 2015). The studies we review here date from between 2006 and 2016, when, despite these gradual reforms and improvements, a disparity remained between rural migrants and their urban counterparts. It remains to be seen if current and future studies show a different picture.

Against the contexts of the changing hukou system, economic and urban studies have generated rich findings about urban social exclusion of rural migrants and the ways in which they are deprived of equal participation in the opportunities available to urban residents (Chow and Lou, 2015; Guo and Wang, 2015; Huang et al., 2010; Zhan, 2015). While most studies recognize that hukou-based institutional exclusion leads to unequal rights and opportunities, Zhang et al. (2014) provide an expanded account of hukou-based social exclusion of rural migrants on the regulative, normative, and cognitive dimensions. The regulative dimension concerns the regulations in the hukou-based administrative and management system which provide the legal basis for the restraint of citizenship rights of rural migrants. The normative aspect refers to the solidification of rural–urban hukou classification into hukou-based social identities with differentiated social status, which they suggest builds a wall between urban residents and rural migrants in their social interactions. From the cognitive perspective, they argue, the formation of hukou-based social exclusion has led to social stigma as rural migrants are negatively defined, interpreted and categorized, separated from urban society and experience social discrimination. Accordingly, in the specific context of hukou-regulated internal migration in China, three dimensions of social exclusion for rural-urban migrant workers can be identified: economic exclusion, community exclusion, and psychological exclusion. Economic exclusion refers to the limitation of rural-urban migrants' opportunities for and access to social welfare and services, employment and education. Community social exclusion refers to the lack of opportunities in social interaction and participation and the experiences of stigma and discrimination. Psychological exclusion refers to migrants experiencing conflicts in identity and sense of belonging. Economic exclusion echoes the regulative dimension while the latter two echo the normative and cognitive dimensions of hukou-based social exclusion.

Following the international migration health literature and recognising that rural migrants may encounter a set of stressors different from non-migrants, some scholars have paid attention to the mental health status of China's rural-urban migrants. Their work has been particularly focused on the comparison with the population in their hometown or host society and the effects of different dimensions of social exclusion as stressors, not least of which is the hukou system, and this has generated rich yet conflicting results. The only earlier attempt to synthesise the knowledge of China's migrant workers' mental health was the work by Zhong et al. (2013). They undertook a meta-analysis to estimate the prevalence of psychological symptoms in migrant workers, based on 48 Chinese and 2 English studies using SCL-90-R, and reported that China's migrant workers experienced a greater severity of psychological symptoms than the general population on nearly all symptom dimensions. In this current paper, on the other hand, we aim to provide a narrative synthesis of published empirical research in both English and Chinese, focusing on 1) the difference in mental health status between rural migrants, urban residents, and rural non-migrants; 2) the associations between migrants' urban social exclusion and their mental health consequences. The evidence is summarized to provide explanatory contexts to mental health and migration in the mega-cities and leads to recommendations for future 'neourbanistic' empirical research.

2. Search strategies and selection of studies

We conducted literature searches using Ovid MEDLINE, PsycINFO, Web of Science and CNKI (China Academic Journal Database) in February 2017. The search strategy consisted of a key word search using 'China' AND either 'migrants', 'migration', 'migrate workers', 'floating people', 'peasant workers' AND either 'mental health', 'mental illness', 'mental disorder', 'psychological distress'. The reference lists of the selected articles were examined to identify additional eligible articles. We evaluated each article against our inclusion criteria based on the title and abstract. Full text review was then conducted to decide whether the article met all of the criteria. To be included, studies must

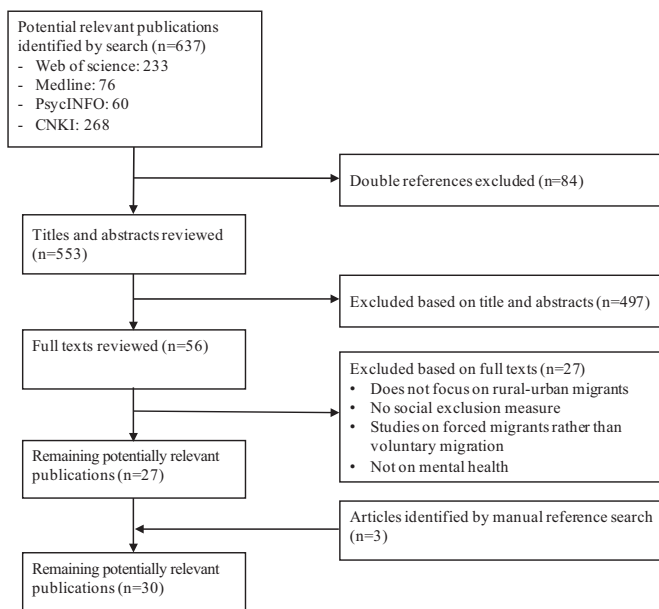


Fig. 1. Flow chart of literature search.

have: 1) been in English or Chinese, 2) studied populations that included Chinese rural-to-urban adult migrants currently living in cities, 3) compared the mental health between migrants and non-migrants and/or included at least one aspect of urban exclusion measurement. Exclusion criteria consisted of non-empirical studies and any study on Chinese immigrants in foreign countries, children, adolescents or the elderly exclusively as participants, and studies that did not have a significant focus on mental health.

We initially selected 56 studies based on the titles and abstracts. After reading the full texts, a total of 30 articles met all the criteria and were included in the review, with 20 English and 10 Chinese articles (Fig. 1, Table 1). All of them were published in or after 2007, which shows a clear boom of China's migrants' mental health studies in the past decade. The articles by Liu et al. (2011) and Liang (2014) included in this review used the same dataset but conducted different analysis. The study sites were concentrated in Beijing the capital, the Yangtze River Delta and the Pearl River Delta, where the most developed areas are with the most population inflow, and large cities in the middle and southwest, such as Wuhan and Chengdu (Fig. 2). All the 30 studies identified were quantitative. Sample size ranged from 328 to 13,204. Only one was a longitudinal study over a period of 12 months (Hu et al., 2012), while the rest were cross-sectional study. All of them used standard structured tools that have been validated in China to measure mental health, the most frequently used being Symptom Checklist 90 (SCL-90), 36-Item Short Form Survey (SF-36), and Centre for Epidemiologic Studies - Depression Scale (CES-D). SCL-90 is a self-report psychometric instrument to assess nine mental health symptom dimensions, including somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism; SF-36 consists of eight scaled scores that measure vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning and mental health; the CES-D is a screening test for depression and depressive disorder. More detailed descriptions of these and other cited measures are available in the general literature.

3. Mental health of migrants compared to urban residents and rural non-migrants

Ten of the reviewed studies compared the mental health status of rural-urban migrants and local urban residents: of these, four reported

no significant differences in mental health status between the two groups (Chen, 2011; Hoi et al., 2015; Jin et al., 2012; Lin et al., 2016), two reported that migrants had slightly better mental health than local urbanites (Li et al., 2014, 2007), and four reported inferior mental health status of migrants compared with urban residents (Lam and Johnston, 2014; Li et al., 2009; Lu et al., 2015; Wen et al., 2010). Li et al. (2014) reported that migrant workers in Guangzhou had higher scores than their urban counterparts in both WHO-5 and SF-36 MH scale (95% CI), but this result was mainly seen in the older group. In contrast, Lu et al. (2015) reported that migrants scored significantly lower on SF-36 in all domains compared with local residents, indicating worse physical and mental health status. Li et al. (2009)'s study in Beijing showed that migrants scored higher on the SCL-90 (inferior health) than urban residents on each of the subscales. One study in Shanghai reported that migrants exhibited better health than natives in Shanghai in self-rated health and chronic conditions but not in psychological well-being (Wen et al., 2010). Lam and Johnston (2014) found that the prevalence rate of clinically relevant depression symptoms among migrants (8%) was much higher than urban residents (4.7%).

Five of the studies compared migrants' mental health with rural non-migrants and consistently showed that migrants' mental health status is no better than rural non-migrants. Li et al. (2007) found that migrants scored much lower than their rural counterparts in western Zhejiang on the SF-36 ($p < 0.0001$). Comparing migrants with local rural residents in Beijing, Chen (2011) also found that migrants had higher level of distress. However, the rural area of western Zhejiang and Beijing is much richer and more developed than most inland regions where the majority of rural migrants come from, and therefore it is more meaningful to compare migrants with rural residents in the community where they migrated from rather than where they relocated to. Li et al. (2009) compared migrants with the rural residents of eight provinces where 75% of their migrant sample came from, and reported that migrants did not enjoy a more positive mental health status than their rural counterparts. Migrants scored higher than rural residents on the depression scale and the psychoticism scale on SCL-90 and no significant differences on other scales. Dai et al. (2015) investigated both migrants and non-migrant rural residents in a rural area in southwestern China and revealed that there were no significant differences on the psycho-QOL or one-year suicidal behaviours, but migrant status significantly correlated with a decreased risk of depression. Jin (2016) demonstrated that current migrants do not differ significantly from rural nonmigrants in terms of emotional role functioning but they are less happy than rural nonmigrants with similar background ($\beta = -0.12$, $p = 0.01$).

4. Urban social exclusion and rural-urban migrants' mental health

The studies reported in the previous section thus show a complex and contradictory picture, both for the mental health status of migrants in relation to non-migrant residents in their locality, and for migrant mental health status in relation to their rural counterparts. We therefore explored whether urban social exclusion could be an important factor contributing to the different patterns of mental health status between migrants and non-migrants. The operationalization of the social exclusion concept in the studies is summarized in Table 2.

Twenty of the reviewed articles contains at least one dimension of measurement that related to our definition of social exclusion. The measurements were highly context-specific to reflect issues encountered by China's rural-urban migrants. Employment-related issues were the most common measures that related to economic exclusion, while only two articles measured housing conditions and no study focused on education attainment. Many of the articles reported measures of social stigma and discriminatory experience, as well as social interactions with the local residents and participation, and these

Table 1
Summary of selected studies.

Author and year	Location	Aim of the study	Sample	Instruments	Main results
Li et al. (2007)	Hangzhou	To compare the mental health status of rural-urban migrants, permanent urban residents, and permanent rural dwellers	N = 4452 Migrants N = 1909 Rural residents N = 1958 Urban residents	● 5-item Mental Health Scale from Chinese SF-36	● Migrants had slightly better mental health than urbanites but worse mental health than rural dwellers ● Good self-reported health, migration with a partner and higher salary had strong associations with better mental health
Li et al. (2009)	Beijing	To compare the mental health symptoms of rural to urban migrants and their urban and rural counterparts	N = 1006 Migrants N = 1000 Urban residents N = 1020 Rural residents	● SCL-90	● Migrants had inferior mental health status compared with urban residents in the communities to which they had immigrated. ● Migrants did not enjoy a more positive mental health status than their rural counterparts ● Migrants on average exhibit better physical health than natives in Shanghai. ● Neighbourhood satisfaction, social cohesion and safety show strong association with health, but the effect was weaker for migrants than for local residents ● Both experience of discrimination in daily life and perceived social inequity have a significant influence on mental health among rural-urban migrants
Wen et al. (2010)	Shanghai	To compare health status between internal migrants and urban natives in Shanghai and examines neighbourhood effects on physical health and psychological well-being	N = 557 Local residents N = 508 Migrants	● Chinese version of perceived stress scale ● Self-rated health	● Beijing rural residents had the lowest level of distress compared with Beijing urban residents and migrants ● No significant difference in the level of distress between Beijing urban residents and migrants ● 24% of female migrant workers have poor mental health
Lin et al. (2011)	Beijing	To examine discriminatory experiences and perceived social inequity in relation to mental health status among rural-urban migrants	N = 1006 Migrants	● SCL-90	● “Financial and employment-related difficulties”, “cultural differences”, gender-specific stressors and “better future for self and children” significantly accounted for their mental health outcomes
Chen (2011)	Beijing	To understand the migrant population's general health status and mental distress, and compare them with urban and rural non-migrants	N = 1474 Beijing urban residents (more than 60%), Beijing rural residents (15%), urban-urban migrants (8%), rural-urban migrants (15%) N = 959 female migrant workers	● Self-rated physical health ● K10 psychological distress	● The prevalence of clinically relevant DS among migrant factory workers was 21.4%. ● Being a minority, shorter intension of stay, working long hours, being a casual smoker or a frequent internet user, and having better education are associated with higher risks of DS
He and Wong (2013)	Shanghai, Kunshan, Dongguan and Shenzhen,	To explore the difficulties and perceived meaningfulness of migration and their effect on the mental health status of female migrant workers		● BSI	● The prevalence of clinically relevant DS among migrant workers was 23.7%, and 12.8% were consistent with a clinical diagnosis of depression
Mou et al. (2011)	Shenzhen,	To assess the prevalence of depressive symptoms (DS) and associated factors among migrant factory workers	N = 4280 Migrants	● Chinese version of the Centre for Epidemiologic Studies Depressive Scale (CES-D)	● Self-rated health had negative effects on depression ● More over-time work, forced work, unsatisfactory labour rights and hazard work environment are associated with worse mental health
Qiu et al. (2011)	Chengdu,	To understand prevalence of depression symptoms and factors associated with depression among Chinese migrant workers	N = 1180 Migrants	● CES-D	● In general, the new generation migrants are not in good mental health status ● Migration related stresses such as adaption to the city, perception of equity and inclusion, are the major factors influencing the new generation migrant workers' mental health
Liu et al. (2011)	19 cities in the Yangtze River Delta and Pearl River Delta	To investigate the relationship between labour rights and mental health of migrant workers	N = 4152 Migrants	● GHQ-12	● The mental health status of the migrants did not differ significantly from that of the natives
Liu (2011)	Pearl River Delta	To examine the new generation migrant workers' mental health and influence factors	N = 1116 New generation migrants (under the age of 26)	● Nine factors (Insomnia, exhausted, hostile, cry, feel lonely, useless, life is hard, meaningless)	● Trans-local ties foster a favourable evaluation of their status in Shanghai and buffer their perception of discrimination
Jin et al. (2012)	Shanghai	To find out the relationship between migrants' social ties and their mental health	N = 339 Migrants N = 554 Shanghai natives	● K6 scale of psychological well-being	

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Table 1 (continued)

Author and year	Location	Aim of the study	Sample	Instruments	Main results
Yang et al. (2012)	Hangzhou and Guangzhou	To explore mental health status and related characteristics of Chinese male rural-urban migrants	N = 1595 Male migrant workers	<ul style="list-style-type: none"> Chinese Perceived Stress Scale (CPSS) Chinese Health Questionnaire (CHQ) 	<ul style="list-style-type: none"> The prevalence of probable mental disorder was 24.4% Higher life stress and higher work stress were positively associated with risk for probable mental disorder
Hu and Chen (2012)	Xiamen	To examine the social factors influencing rural-urban migrants' mental health	N = 915 Migrants	<ul style="list-style-type: none"> SCL-90 	<ul style="list-style-type: none"> Perception of lower income and social inequity is negatively associated with mental health More interactions with neighbours and coworkers have positive effects on mental health while more interactions with Xiamen local people have negative effects on mental health
Hu et al. (2012)	Beijing and Hangzhou	To investigate the relationship between discrimination perception, adversity appraisal, and psychological adjustment of rural-urban migrants	N = 328 Migrants	<ul style="list-style-type: none"> CES-D Satisfaction with Life Scale (SWLS) Scale for self-esteem Hopkins Symptoms Check List 	<ul style="list-style-type: none"> Discrimination perception is associated with psychological distress measured by the level of depression, self-esteem and satisfaction with life, and mediated by adversity appraisal Economic and social inclusion is significantly associated with the mental health status of rural-to-urban migrant workers
Nie and Feng (2013)	Nine cities in the Pearl River Delta	To understand how urban inclusion affect the mental health of rural-to-urban migrant workers	N = 3086 Migrant workers	<ul style="list-style-type: none"> WHO Five-item Well-being Index Scale (WHO-5) 5-item Mental Health Subscale from SF-36 	<ul style="list-style-type: none"> Migrant workers showed a small but significant advantage in mental wellbeing compared to their urban counterparts The old generation migrants (born before 1980) showed better mental health than the new generation migrants
Li et al. (2014)	Guangzhou	To compare the mental wellbeing between migrant workers and their urban counterparts in different generation	N = 914 Migrant workers N = 814 urban residents	<ul style="list-style-type: none"> WHO-5 	<ul style="list-style-type: none"> Longer weekly work hours, more exposure to hazardous work environment, higher job demands, and lower job autonomy were significantly associated with worse psychological well-being Migrants in Shenzhen have higher prevalence of depression but less utilization of healthcare services or self-medication The mental health status of the new generation migrants is significantly poorer than the old generation Positive perception of the host city and self-identity of a worker has positive impact on the old generation but not the new generation
Zeng et al. (2014)	Guangzhou, Foshan, Zhaoqing, Qingyuan	To assess mental health of workers and explore the associations between physical and psychosocial work environment and worker's mental health	N = 907 Migrants	<ul style="list-style-type: none"> CES-D GHQ-12 	<ul style="list-style-type: none"> Among young rural Chinese, there were no significant associations involving migrant status and poor psycho-QOL or one-year suicidal behaviours Migrant status significantly correlated with a decreased risk of depression Collectivistic orientation alleviated depression through reducing acculturative stress and cultural self-efficacy Migrants showed a significant lack in nearly all social resources compared to local residents but depression was not significantly different between the two groups For migrants, greater belonging was associated with less depression Migrants scored significantly lower on SF-36 in all domains, indicating worse physical and mental health
Lam and Johnston (2014)	Shenzhen	To find out the prevalence of depression symptoms and its impact on health-seeking behaviour among Chinese migrant workers	N = 859 Local residents N = 674 Migrants	<ul style="list-style-type: none"> CES-D 	<ul style="list-style-type: none"> Migrants in Shenzhen have higher prevalence of depression but less utilization of healthcare services or self-medication
Liang (2014)	19 cities in the Yangtze River Delta and Pearl River Delta	To examine the mental health status of the old and new generation migrants and its influential factors	N = 4152 Migrants	<ul style="list-style-type: none"> GHQ-12 	<ul style="list-style-type: none"> The mental health status of the new generation migrants is significantly poorer than the old generation
Dai et al. (2015)	Mianyang, Sichuan Province	To explore the associations between migrants status, mental health, and suicidal behaviours in young rural Chinese	N = 756 Migrants N = 890 Non-migrants	<ul style="list-style-type: none"> CES-D 6-item Psychological Quality of Life (Psycho-QOL) 	<ul style="list-style-type: none"> Among young rural Chinese, there were no significant associations involving migrant status and poor psycho-QOL or one-year suicidal behaviours Migrant status significantly correlated with a decreased risk of depression Collectivistic orientation alleviated depression through reducing acculturative stress and cultural self-efficacy Migrants showed a significant lack in nearly all social resources compared to local residents but depression was not significantly different between the two groups For migrants, greater belonging was associated with less depression Migrants scored significantly lower on SF-36 in all domains, indicating worse physical and mental health
Du et al. (2015)	Beijing	To understand the longitudinal relationship of collectivistic orientation and depression	N = 641 Migrants	<ul style="list-style-type: none"> CES-D 	<ul style="list-style-type: none"> Among young rural Chinese, there were no significant associations involving migrant status and poor psycho-QOL or one-year suicidal behaviours Migrant status significantly correlated with a decreased risk of depression Collectivistic orientation alleviated depression through reducing acculturative stress and cultural self-efficacy Migrants showed a significant lack in nearly all social resources compared to local residents but depression was not significantly different between the two groups For migrants, greater belonging was associated with less depression Migrants scored significantly lower on SF-36 in all domains, indicating worse physical and mental health
Hoi et al. (2015)	Guangzhou	To evaluate social-level risk factors for depression between migrants and non-migrants	N = 383 Migrants N = 295 Non-migrants	<ul style="list-style-type: none"> Patient Health Questionnaire-9 Social Support Rating scale 	<ul style="list-style-type: none"> Migrants showed a significant lack in nearly all social resources compared to local residents but depression was not significantly different between the two groups For migrants, greater belonging was associated with less depression Migrants scored significantly lower on SF-36 in all domains, indicating worse physical and mental health
Lu et al. (2015)	Shenzhen	To find out health-related quality of life (HRQOL) and health service utilization among Chinese rural-urban migrants	N = 2315 Migrants N = 2347 Local urban residents	<ul style="list-style-type: none"> SF-36 Self-reported health service 	<ul style="list-style-type: none"> Migrants showed a significant lack in nearly all social resources compared to local residents but depression was not significantly different between the two groups For migrants, greater belonging was associated with less depression Migrants scored significantly lower on SF-36 in all domains, indicating worse physical and mental health

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Table 1 (continued)

Author and year	Location	Aim of the study	Sample	Instruments	Main results
		to-urban migrant workers in comparison to local urban residents		utilization	status
Cheng et al. (2015)	Xiamen	To examine the effects of acculturation on the mental health of both old and new generation migrants	N = 1507 Migrants	● Satisfaction (SWLS)	● migrant workers were much less likely to see a doctor than local urban residents
Wang and Chen (2015) Jin (2016)	Wuhan National	To investigate the relationship between social capital, social inclusion, and migrants' health To investigate how rural-urban migration influences migrants' perception of relative deprivation, and how relative deprivation mediates the effects of migration on psychological wellbeing	N = 769 Migrants N = 13,204 Migrants	● SF-36 ● Happiness ● Role functioning	● The old generation migrants have higher satisfaction with life and better acculturation than the young generation migrants ● Keeping the hometown culture, mastering the local dialect, and identifying the city are positively associated with mental health ● Social inclusion is significantly positively associated with migrants' physical and mental health ● Current migrants are more likely to perceive relative deprivation than rural and urban non-migrants. ● There is little evidence that relative deprivation mediates the relationship between migration and the frequency of emotional problems affecting role functioning
Lin et al. (2016)	Zhongshan	To investigate association between social integration and health among internal migrants in Zhongshan	N = 1999 Migrants N = 1997 Non-migrants	● K6 scale of psychological well-being	● Significant differences between migrants and non-migrants in self-reported health, subjective well-being, perception of stress, but not mental health ● The relative position in income or occupation in the whole society, degree of respect received from others, number of activities attended and bringing more family members were positively associated with mental health
Su et al. (2016)	Fifteen cities	To investigate the relationship between deprivation and migrant workers mental health	N = 4197 Migrants	● GHQ-12	● Long working hours, lack of social insurance, and relative deprivation compared with rural and urban non-migrants are negatively associated with migrant worker's mental health ● More social communication and less social exclusion from urban citizens can significantly improve mental health among migrant population.
Cao (2016)	National	To investigate the factors influencing migrants' mental health with structural equation model	N = 4386 Migrants	● Three indicators on depression, hostility, and grief	● A significantly higher level of psychological distress among rural migrants in Shenzhen compared to those in Shanghai
Wen et al. (2016)	Shanghai and Shenzhen	To investigate the psychological distress of rural migrants and the roles of structural, social, and personality factors	N = 896 Migrants in Shenzhen; N = 316 Migrants in Shanghai	● K6 scale of psychological well-being	● Neighbourhood social cohesion was significantly correlated with psychological distress

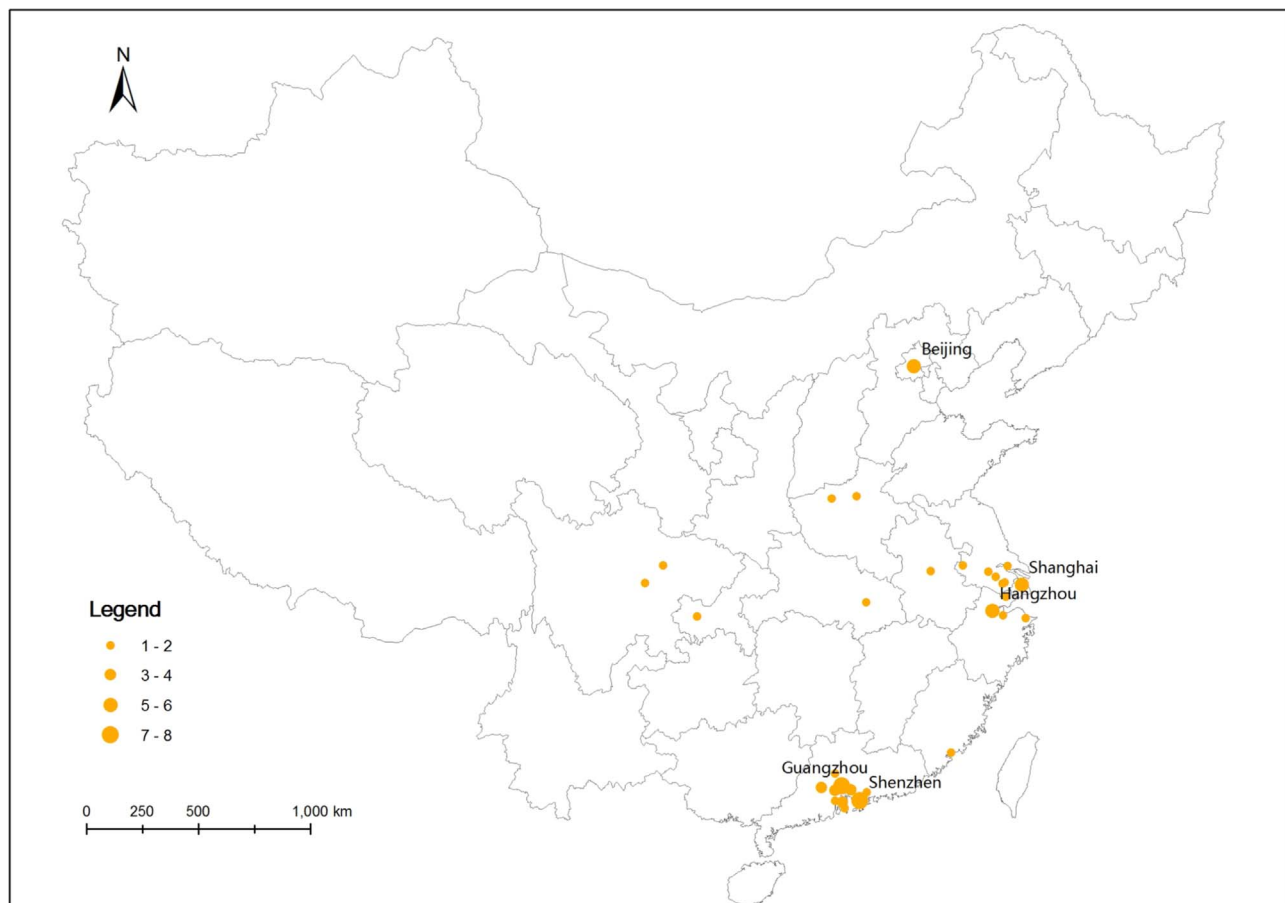


Fig. 2. Research sites of selected studies (the size of the dots denotes, in all the selected studies, the total number of times a city was included).

are also indicators of interpersonal exclusion. The most frequent reported measures that related to psychological exclusion concerned self-identity and sense of belonging.

4.1. Economic exclusion and mental health

Among the articles reviewed, nine examined the relationship between certain variables related to economic exclusion and migrants' mental health. Issues concerning economic exclusion were reflected in the limited access to full labour rights and housing opportunities, as rural migrant workers worked as "informal" or "temporary" employees that concentrated in urban villages or employer-provided dormitories

rather than decent urban communities. Eight of the studies examined certain aspects of exclusion from full labour rights and reported significant association with mental health status (Liang, 2014; Lin et al., 2016; Liu et al., 2011; Mou et al., 2011; Nie and Feng, 2013; Su et al., 2016; Yang et al., 2012; Zeng et al., 2014). For example, a survey from 4088 migrant workers in Shenzhen showed that having a formal working contract (OR = 0.211, 95% CI = 0.134–0.332) is associated with lower chances of depression (Mou et al., 2011). Using a sample of 1999 households of internal migrants in Zhongshan, Lin et al. (2016) reported that 25.8% did not have a labour contract, which was negatively associated with their subjective well-being but not their mental health status. Participation in social insurance is significantly

Table 2

Domains of social exclusion in the reviewed articles.

Economic exclusion	Community/interpersonal exclusion	Cultural/psychological exclusion
1. Labour rights	1. Social stigma and discrimination	1. Identity and sense of belonging
<ul style="list-style-type: none"> ● Labour contract ● Employment benefits ● Social insurance ● Delay in pay ● Deduction in pay ● Violence in management ● Whether overtime work is voluntary or forced ● Autonomy at work ● Living in dormitory/rented/owned housing ● Living space ● Housing quality 	<ul style="list-style-type: none"> ● Inferior feeling in the city ● Perceived lower socio-economic status ● Degree of respect compared with whole society ● Being looked down upon in the public/barred from entering service venues/interrogated by the police in public/suspected for a crime/wrong-doing because of migrant status ● Number of friends with local people ● Frequency of interactions with local friends ● Marriage with local people ● Participation in activities after work ● Participation in organizations ● Neighbourhood cohesion 	<ul style="list-style-type: none"> ● Self-identity as farmer/worker ● Self-identity as a member of the city ● Sense of belonging to the city
2. Housing segregation	2. Social interactions and participation	

associated with migrants' better mental health measured by GHQ-12 or HSCL (Nie and Feng, 2013; Su et al., 2016). Deferred pay was associated with probable mental disorders measured by GHQ (Yang et al., 2012) and migrants who experienced deduction in pay were in worse mental health status (Nie and Feng, 2013). Having to work against one's will under high-pressure management, such as lack of autonomy at work and forced (overtime) work, was significantly associated with worse mental health status (Liang, 2014; Liu et al., 2011; Nie and Feng, 2013; Zeng et al., 2014). Two studies examined the impact of housing exclusion on mental health (He and Wong, 2013; Nie, 2013). Both found no significant difference in mental health status between those living in dormitories and those living in rented housing. But counter-intuitively, Nie and Feng (2013) reported that those living in self-owned housing had worse mental health, possibly because they experienced a higher financial burden. He also found that larger size for average living space and higher housing quality is significantly associated with better mental health status, as one might expect.

4.2. Community and psychological exclusion and mental health

Fifteen of the reviewed articles examined the association of certain community social exclusion factors and migrants' mental health. Six articles consistently revealed that perceived discrimination and stigma are negatively associated with mental health (Cheng et al., 2015; Hu and Chen, 2012; Jin et al., 2012; Lin et al., 2011; Yang et al., 2012; Hu et al., 2012). Lin et al. (2011) found a high level of discrimination experience among rural migrants in urban China, and that perceived discrimination was a significant factor ($p < 0.0001$) for all SCL-90 subscales. Six studies found that perceived difference in socio-economic status is negatively associated with mental health (Hu and Chen, 2012; Jin, 2016; Jin et al., 2012; Liang, 2014; Lin et al., 2011; Liu, 2011). For example, Jin et al. (2012) showed that migrants who felt that their status was lower or much lower than the Shanghai natives reported worse mental health than those who felt that they were equals to the Shanghai natives. Six studies examined migrants' social interactions and four found positive associations with mental health (Cao, 2016; Liu et al., 2011; Nie and Feng, 2013; Wang and Chen, 2015) while two reported insignificant results (Cheng et al., 2015; Jin et al., 2012). In Hu and Chen (2012)'s analysis, more social interactions with neighbours and co-workers are associated with less mental health issues, but more interactions with local urban residents are associated with more mental health problems. They explained this finding by suggesting that the more migrants interacted with local people the more they perceived differences in their social and economic status, which is negatively associated with mental health. Four studies analysed the impact of social participation (Cao, 2016; Lin et al., 2016; Liu et al., 2011; Nie and Feng, 2013). Nie and Feng (2013) found that more participation with social organizations is associated with better mental health while two other studies reported no significant influence (Lin et al., 2016; Liu et al., 2011). Moving beyond the simple fact of organization participation, Lin et al. (2016) reported that the number of activities participated in was positively associated with mental health status. The study by Wen et al. (2016) found neighbourhood social cohesion was significantly and negatively linked to psychological distress after controlling for individual-level social resources; this is one of the first studies to report that neighbourhood social cohesion is beneficial to rural migrants' mental health in China. Five articles examined the impact of psychological exclusion on migrants' mental health. There is evidence showing self-identity is important to migrants' mental health. Migrant workers identifying themselves as locals had better mental health compared with those identifying themselves as outsiders, and those identifying themselves as workers were in better mental health than those identifying themselves as farmers (Cheng et al., 2015; Liang, 2014; Lin et al., 2016; Qiu et al., 2011). The lack of sense of belonging to the city was associated with depression (Hoi et al., 2015).

5. Discussion and conclusion

This review has synthesised current empirical studies on China's rural-urban migrants' mental health status in comparison with urban and rural nonmigrants, and has specifically considered the extent to which urban social exclusion might be a key factor shaping their mental health. Studies comparing the mental health status between rural-urban migrants and their urban and rural counterparts produced a complicated picture, varying according to what aspects of mental health are being studied, as well as the precise nature of the comparison. The result of our review of available studies differs from that reported by Zhong et al. (2013), who, using meta-analysis, found migrants were in worse mental health compared with general population. This is possibly because the majority articles Zhong et al. (2013) included are non-case-control studies and only compared results with Chinese norms from the general population, whereas the studies included in this review are all case-control studies that collected data on both migrants and non-migrants and results could be more convincing. Another possible reason is geographical variation and the differences in measurement tools in selected studies. Regarding particular dimensions of mental health, Lam and Johnston (2014) used CES-D and reported that migrants were more likely to have clinically significant depressive symptoms than urban residents; Li et al. (2009) also found that migrants scored higher than urban residents on each of the SCL-90 subscales. These two studies using clinical diagnostic instruments consistently showed that migrants had increased risks of depression and other mental illness than urban residents. Li et al. (2009)'s study also reported that migrants scored higher than rural residents on the depression scale, but Dai et al. (2015) showed contradictory results in that migrant status was significantly correlated with a decreased risk of depression compared with rural residents. However, most of the comparative studies we reviewed used general self-reported measurements to detect nonspecific distress (such as K6 or SF-36) and did not provide information on differences in specific types of mental illness; this is one area where we need finer grained research in future studies. Studies reporting that migrants' mental health status was better or comparable with urban residents proposed several possible explanations, including the suggestion that individuals in better health conditions were more likely to make the decision to migrate (the so-called "healthy migrant effect") (Dai et al., 2015; Li et al., 2014), that they have taken the step of migration to improve their economic conditions and pursue a better life (Li et al., 2007), that migrants with poorer health are more likely to return to their origin communities (Lu and Qin, 2014), and that many will eventually return to their place of origin and thus they experience less stress compared with the permanent cross-border migrants (Li et al., 2007). In contrast, findings that migrants' mental health status was inferior suggested that this could result from a range of difficulties and stressors in their integration into the city and a stronger sense of relative deprivation, even while their socioeconomic conditions improve (Jin, 2016). Each of these hypotheses has some face plausibility, however, we suggest, that many of the findings are more intelligible if they are framed, not individualistically, in terms of the prior mental health of migrants, or the consequences of mental ill health for those individual migrants affected, but in terms of the diverse dimensions of social exclusion. This reframing, focusing on the role of social exclusion in rural-urban migrants' mental health, may contribute to the somewhat confused debate about 'social capital' in contemporary psychiatric epidemiology (Moore and Kawachi, 2017); however the significance of social exclusion, and the specificity of different aspects of social exclusion, clearly requires evaluation in future research which focuses on this issue.

There was strong evidence showing that various dimensions of urban social exclusion resulting from the hukou system as well as other economic, social and cultural factors are associated with adverse mental health consequences of China's internal rural migrants. The

limited access to full labour rights, the experience of discrimination, the perception of lower status in the society and the conflicts in self-identity are critical factors negatively associated with rural migrants' mental health status. Rural migrants' inadequate rights in housing, education, health and access to services are rooted in the urban-rural dual society that was created by the hukou system. While hukou-based economic exclusion has been reduced in recent years through policy reforms whereby more economic opportunities and social services are made available to rural migrants, the social and psychological effects of hukou still linger; current evidence suggests that rural hukou holders are still regarded as inferior and outsiders in the cities (Du et al., 2017; Liu et al., 2017a). Most of the studies that we were able to include in our review focused only on one dimension of social exclusion; moreover, in several studies, social exclusion related factors were not the primary focus of the paper. Further research is needed to test the relationships and pathways between different dimensions of urban social exclusion and migrants' mental health and the key factors contribute to their mental health burdens. Notably, our review did not identify any studies examining the educational exclusion of migrants and its impact on their mental health. Educational exclusion is an important aspect of economic exclusion, and it is critical to Chinese parents who put great value on the education of their children. Currently, educational segregation persists in urban China where rural migrants cannot send their children to public schools in the big cities. They have to either keep their children in their hometown for education or send them to local privately operated schools specifically for "migrants children", where education quality is not comparable to local public schools - migrant students who are unable to enroll in public schools perform significantly worse than their more fortunate counterparts in both Chinese and Mathematics (Chen and Feng, 2013). Another under-researched area is the impact of residential segregation at the neighbourhood level. Residential segregation may shape migrants' perception of exclusion through intergroup interactions and sense of belonging (Liu et al., 2017a; Wang et al., 2016a), and therefore may have important mental health implications.

A focus on social exclusion does, of course, run up against the key question of establishing directions of causality. Put simply, if there is an association, is it because social exclusion exacerbates mental ill health, or is it because those with prior mental ill health gradually limit or lose their social connections, curtail their social interactions and 'drift' into exclusion? While earlier researchers on urbanization and mental ill health suggested that the experiences of many of those who migrated to the cities were themselves pathogenic, by the 1980s many researchers rejected this view in favour of a notion of 'urban drift'. Thus the English social psychiatrist John Wing, writing about schizophrenia, argued that theories that suggested that the condition was generated by living in conditions of poverty and isolation had been disproved by research; these conditions were, in fact, "actively sought by the individual instead of being a cause of the breakdown" (Wing, 1980: 558). However more recent detailed longitudinal research has largely rejected this 'urban drift' hypothesis. Thus a Swedish study that linked data from a cohort survey of male Swedish conscripts to the Swedish National Register of Psychiatric Care explicitly challenged the "geographical drift hypothesis" arguing that the raised rates of schizophrenia among those who had migrated to cities "cannot be explained by the widely held notion that people with schizophrenia drift into cities at the beginning of their illness.... undetermined environmental factors found in cities increase the risk of schizophrenia" (Lewis et al., 1992:137). Other cohort studies have also shown that urbanicity itself increases the risk of mental disorder (Pedersen and Mortensen, 2001:1039) with a number of authors pointing explicitly to the quality of social relationships (Krabendam and Van Os, 2005), arguing that what is important is not so much social isolation in itself, but a lack of 'social capital' (De Silva et al., 2005; Drukker et al., 2005, 2003).

While, as we have said, social capital is itself a contested concept, the dimension that has been identified as significant in most research

which has used this idea to explore the incidence of mental disorders is that which concerns the importance of *feelings* of mutual trust, solidarity and *beliefs* about reciprocity; it is the absence or reduction of these cognitive and affective dimensions of social relationships that seems to be related to increased incidence, not just for schizophrenia but also for 'common mental disorders' (Ehsan and De Silva, 2015). These are indeed precisely the aspects of social exclusion that we have identified in our analysis of the existing literature on rural-to-urban migrants in China: for example, experiences of stigma and discrimination, and perceptions by migrants that they are regarded as inferior and of lower social status. To explore these cognitive and affective dimensions more directly, and to conceptualize them more adequately, research needs to go beyond social epidemiology, and to complement correlational evidence using broad measures in standardized tests with in depth ethnographic street life studies of the experience of rural to urban migrants. This is the direction we are pursuing in our current research in Shanghai.

There are several limitations of existing studies. First, the measures used in these studies only picked up the less severe conditions, such as depression, anxiety and so forth, rather than the more severe conditions such as schizophrenia or bipolar disorder, both of which have been shown to be associated with rural-urban migration in studies in other regions (Peen et al., 2010; van Os et al., 2010). Future research should investigate such severe mental health issues in relation to the specificity of migrants' urban experiences. Second, the existing studies are predominantly cross-sectional and it is impossible to examine changes in mental health status in different stages of migration. Thus our review highlights the need for longitudinal study comparing migrants' mental health status before migration, immediately after migration, and indeed for follow up studies years later after migration when migrants are more integrated with the urban society. Longitudinal studies are useful in identifying causal relationships. In addition, using 'external shock', such as famine, environmental deterioration, or building dams, as instrumental variable is another possible way to causal inference. For example, Wang et al. (2016b) reported ecological migrants (migration caused by environmental deterioration) in Ningxia had lower risk of mental disorders than original residents, which shows that ecological migration may improve people's mental health by improving their living environment and social economy. Third, existing studies on Chinese rural migrants' mental health are all quantitative epidemiological studies with standard measurement of mental health and correlating them with discrete social exclusion measurements. While quantitative social epidemiology has many strengths, it cannot examine the ways in which different aspects of urban living and the diverse stressors of migration interact in the life experience of individuals, nor can such studies explore mechanisms, that is to say, the ways that the complex biological, psychological and sociological factors relate to each other (Galea and Link, 2013; Galea et al., 2011; Söderström et al., 2016). Partly because of the estrangement of the qualitative social sciences from the psychiatric and epidemiological sciences (Fitzgerald et al., 2016b), there is very little close-up sociological or anthropological data informing epidemiological and psychiatric research. Thus our review highlights the need for interdisciplinary research which can explore the variety of different migration experiences in different cities and in different types of work and environment.

To give meaning to the concept of social exclusion, social epidemiology needs to be integrated with close-up, street-level ethnographic data on the daily experience of being a migrant in the contemporary mega-city, as exemplified, for example, in the work of Suzanne Hall in London (Hall, 2015). Such interdisciplinary research is not only necessary to understand the complexities of the relationship between migration and mental health in the mega-cities of developing countries – for instance the ways in which migration may be experienced by young people as a liberation from the constraints of village life and an opportunity to experiment with life forms (such as those described by

Ash, 2017), or the ways in which urban residents and migrants understand and respond differently to their experiences of the city and make use of different forms of support to manage them (Zhang, 2016). Given that mental health services for migrants are minimal in many cities that are rapidly expanding by rural-to-urban migration, such research may have important policy implications, for example in the development of new surveying instruments to map the relations between migration, urban living, and mental health that can provide a “thick” understanding of a variety of urban stressors related to different dimensions of exclusion, to their stressful consequences which are known to exacerbate mental ill health, to environmental factors related to poor mental health such as exposures to toxic pollutants, and their impacts on rural-urban migrants. Such an instrument could provide planning and health disciplines with the necessary knowledge and tools to meet this crucial aspect of the public health challenges of contemporary mass urbanization.

Funding acknowledgement

This research was supported by the Economic and Social Research Council (grant number: ES/N010892/1) and National Natural Science Foundation of China (grant number: 71561137001).

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